

APPENDIX E

BRAC AMBIENT CONCENTRATIONS OF INORGANIC CONSTITUENTS

Sample ID	Location Code	ANTIMONY	ARSENIC	BARIUM	BERYLLIUM	BORON	CADMIUM	CHROMIUM	COBALT	COPPER	LEAD	MANGANESE	MERCURY	MOLYBDENUM	NICKEL	SELENIUM	SILVER	THALLIUM	TIN	VANADIUM	ZINC
<i>(Results reported in milligrams per kilogram)</i>																					
HB-4002*	SB-BLSS-001	<1.4	8.4	32.6	<0.68	9.6	<0.68	77.8	9.1	25.1	9.9	293	<0.1	<5.5	56.5	<0.68	<1.4	<1.4	54.4	59.6	
HB-4003*	SB-BLSS-001	<2	8.6	38.1	<1	24.1	<1	74.5	16.1	29.8	10.4	676	<0.15	<8	82.1	<0.7	<1	<2	<2.7	56.9	74
HB-4004*	SB-BLSS-002	<1.4	10.4	34.9	<0.69	10.1	<0.69	91.7	10.6	33.9	15.5	254	<0.1	<5.5	54.5	<0.69	<1.4	<1.4	72.5	73.2	
HB-4005*	SB-BLSS-002	<1.4	9	36	<0.69	10.9	<0.69	81.4	15.5	28.4	10.9	457	<0.1	<5.5	66.4	<0.48	<0.69	<1.4	<1.4	55.3	70.4
HB-4006*	SB-BLSS-002	<2.5	25.2	34.7	<1.3	46.7	<1.3	67.9	28.4	46.9	8.6	487	<0.19	<10.1	105	<0.88	<1.3	<2.5	<2.5	77.2	71.3
HB-4009*	SB-BLSS-003	<1.3	8.6	40.7	<0.65	10.9	<0.65	80.5	12.3	29.3	10.8	412	<0.097	<5.2	63.7	<0.45	<1.3	<1.3	54.6	65.6	
HB-4010*	SB-BLSS-003	<1.8	6.7	37.4	<0.89	19.3	<0.89	71	15.8	37.3	9.6	629	<0.13	<7.1	76.4	<0.63	<0.29	<1.8	<1.8	60.2	69.1
HB-4011*	SB-BLSS-004	<1.3	10.5	33.9	<0.65	14.6	<0.65	87.3	12.6	30.4	8	332	<0.097	<5.2	66.5	<0.45	<1.3	<1.3	62.5	67.9	
HB-4012*	SB-BLSS-004	<1.8	7.4	36.7	<0.88	20.4	<0.88	107	17.2	35.3	10.4	397	<0.13	<7	81.7	<0.61	<0.88	<1.8	<1.8	61	72.4
HB-4013*	SB-BLSS-005	<1.3	9.7	65.6	<0.65	7.4	<0.65	77.1	12.5	32.7	23.5	409	0.18	<5.1	61	<0.44	<0.65	<1.3	<1.3	67	67
HB-4014*	SB-BLSS-005	<1.6	7.1	31.5	<0.79	12.2	<0.79	76.6	19.9	32	10.5	438	<0.12	<6.3	108	<0.56	<0.79	<1.6	<1.6	60.1	84.3
HB-4015*	SB-BLSS-005	<2	6.5	40	<1	21.1	<1	78.8	19.4	41.3	11.9	778	0.42	<8	91.3	<0.7	<1	<2	<2	66.6	81.5
HB-4016*	SB-BLSS-005	<1.9	8.5	36.3	<0.95	17.8	<0.95	70.8	16.4	36.8	9.9	648	<0.14	<7.6	76.1	<0.66	<0.95	<1.9	<1.9	61.3	70.1
HB-4017*	SB-BLSS-006	<1.3	12.1	46.1	0.68	9.6	<0.67	86.8	26.4	37.3	13.3	857	0.22	<5.4	71.9	<0.47	<0.67	<1.3	<1.3	58	58
HB-4018*	SB-BLSS-006	<2	11.6	43.9	<1	29.5	<1	87.9	32.2	47.1	14.8	562	<0.15	<8.2	122	<0.72	<1	<2	<2	72.1	91.7
HB-4022*	SB-BLSS-007	<1.1	2.3	157	0.82	2.2	<0.53	10.8	6.3	15.2	32.2	252	0.12	<4.3	14.5	<0.37	<1.1	<1.1	<1.1	21.8	32.6
HB-4023*	SB-BLSS-007	<1.4	11.2	37.4	<0.69	10.6	<0.69	81.4	11	29.6	11.4	314	<0.1	<5.5	62.8	<0.48	<0.69	<1.4	<1.4	64.5	67.8
HB-4024*	SB-BLSS-007	<1.6	6.3	28.7	<0.79	17.5	<0.79	55.8	11.4	23.7	7.7	585	<0.12	<6.4	62.7	<0.56	<0.79	<1.6	<1.6	47.7	56.7
HB-4027*	SB-BLSS-008	<1.3	7.3	37.2	<0.67	10.8	<0.67	80.4	14.1	29.1	10.5	302	<0.1	<5.3	71.8	<0.47	<1.3	<1.3	63.5	74.7	
HB-4028*	SB-BLSS-008	<1.8	6.8	34.2	<0.89	23.5	<0.89	66	13.7	26.8	9	487	<0.13	<7.1	70.4	<0.62	<0.89	<1.8	<1.8	55.2	64.1
HB-4029*	SB-BLSS-008	<1.9	6.8	39.9	<0.94	27.2	<0.94	77.8	16.4	30	10.4	752	<0.14	<7.5	84.6	<0.66	<0.94	<1.9	<1.9	64	75.7
HB-4030*	SB-BLSS-009	<1.6	6	42.7	<0.78	14.5	<0.78	74.1	11.3	31.5	9.9	326	<0.12	<6.3	68.7	<0.55	<0.78	<1.6	<1.6	62.2	69.3
HB-4031*	SB-BLSS-009	<1.2	4.6	26	<0.6	28.5	<0.6	59	10.5	20	7	320	<0.09	<4.8	53.8	<0.42	<0.6	<1.2	<1.2	41.1	47.8
HB-4032*	SB-BLSS-010	<1.5	8.4	36	<0.77	12.7	<0.77	88.1	12.6	31.2	13.4	912	<0.11	<6.1	74.6	<0.54	<0.77	<1.5	<1.5	65	83
HB-4033*	SB-BLSS-010	<1.8	7.5	39.7	<0.91	24.3	<0.91	79.7	17.2	33.2	10.8	486	<0.14	<7.3	82.9	<0.64	<0.91	<1.8	<1.8	63.5	76.9
HB-4036*	SB-BLSS-010	<1.9	8	37.9	<0.94	22.9	<0.94	67.9	16.6	31.7	9.6	1000	<0.14	<7.5	75.8	<0.66	<0.94	<1.9	<1.9	57	67.2
HB-4092**	SS-BLSS-001	<1.2	5.8	60.3	1	22.7	<0.58	101	27.9	30.7	21.9	1130	<0.7	<0.88	106	<0.41	<0.58	<1.2	<1.2	79.5	74.9
HB-4094**	SS-BLSS-002	<1.1	2.9	206	1.1	5.3	<0.54	22.1	6.9	9.6	11.4	320	<0.43	<0.88	21.9	<0.38	<0.54	<1.1	<1.1	33.1	33.1
HB-4095*	SS-BLSS-002	<1.2	3.3	189	1.2	5.6	<0.61	32.1	9.1	12.4	12.6	381	<0.49	<0.89	29.7	<0.43	<0.61	<1.2	<1.2	40.2	41.7
HB-4096*	SS-BLSS-004	<1.3	16.9	71.9	0.67	9.3	<0.64	107	9.7	46.3	25.7	317	<5.1	0.28	68.1	<0.44	<0.64	<1.3	<2.2	119	63.1
HB-4097*	SS-BLSS-003	<1.1	14.1	131	0.7	5.9	<0.54	40.2	12.4	21.2	15.1	841	<0.43	<0.88	35.3	<0.38	<0.54	<1.1	<1.1	57.6	49.5
HB-4098**	SS-BLSS-005	<1.1	3.8	94.5	0.79	6	<0.55	36	8.9	14.9	16.9	395	<0.46	0.28	34.2	<0.39	<0.55	<1.1	<1.1	39.5	44.7
HB-99-SO-8**		0.12	12.9	57.4	1.3	13.3	0.77	88.7	27.8	29.5	30.5	245	0.32	0.27	139	<0.35	0.18	25.9	0.62	45.8	232
HB-99-SO-9**		0.1	8.4	86.9	0.73	7.9	0.62	59.9	11.2	29.3	85.6	406	0.19	<0.46	51.4	0.34	0.1	18.3	0.83	70.5	65
HB-99-SO-10**		0.37	12	79	0.84	12.1	0.74	86	13.9	48.5	27.7	317	0.43	0.75	73.8	0.37	0.21	22.3	0.84	118	88.4
HB-99-SS-2-3-10**		0.06	8	63.2	0.7	18.1	0.59	93.7	13.9	37.1	12.7	293	0.14	<0.52	75.5	<0.36	0.12	33.7	0.78	87.7	78.6
HB-99-SS-5-6-10**		<0.06	7.7	49.9	0.53	16.9	0.41	86	11.4	34.5	5.7	253	0.07	<0.56	56.9	<0.35	0.12	24.3	1.4	66	69.2
HB-99-SS-9-10-10**		<0.08	7.3	60.1	0.78	2.4	0.65	96.6	19.3	40.8	12.2	873	0.08	<0.69	100	<0.49	0.16	28.4	1.7	86.1	99.7
Maximum Detection		0.37	25.2	206	1.3	46.7	0.77	107	32.2	59.5	32.2	1130	0.43	0.77	139	0.37	0.21	All Non-Detect	1.7	119	99.7
Minimum Detection		0.06	2.3	26	0.53	2.2	0.41	10.8	6.3	9.6	5.7	253	0.07	0.28	14.5	0.34	0.1	All Non-Detect	0.62	21.8	32.6
Sample Distribution (based on Wilk-Shapiro Test)		Other	Lognormal	Other	Lognormal	Lognormal	Lognormal	Other	Lognormal	Normal	Other	Lognormal	Other	NA	Normal	NA	Normal	All Non-Detect	Lognormal	Other	Normal
Wilk-Shapiro score		0.9134	0.9426	0.6564	0.9421	0.9482	0.9566	0.9035	0.9763	0.9616	0.7858	0.9533	0.5254	NA	0.9639	NA	0.9705	All Non-Detect	0.9529	0.9024	0.9549
Analysis including Results Below Detection Limit																		All Non-Detect			
Mean		0.12	7.8	59.3	0.53	12.7	0.37	73.7	14.4	31.9	13.6	466.6	0.11	0.28	71.0	0.24	0.15	All Non-Detect	0.8	63.4	67.6
Standard Deviation		0.13	1.6	43.0	1.50	1.9	1.39	22.0	1.5	10.3	6.5	1.5	0.10	0.30	25.8	0.09	0.04	All Non-Detect	1.3	19.0	14.8
Final Ambient Comparator		0.37	16.7	189.9	1.03	36.9	0.64	107.0	27.6	48.8	30.7	943.0	0.42	none	113.5	none	0.21	none	1.14	118	92.0
Derivation of Comparator (a),(b)		Maximum detected Value	95th Quantile Parametric	95th Quantile Nonparametric	95th Quantile Parametric	95th Quantile Parametric	95th Quantile Parametric	95th Quantile Nonparametric	95th Quantile Parametric	95th Quantile Parametric	95th Quantile Nonparametric	95th Quantile Parametric	95th Quantile Nonparametric	no comparator	95th Quantile Parametric	no comparator	Maximum detected Value	no comparator	95th Quantile Parametric	95th Quantile Nonparametric	95th Quantile Parametric

* Data referenced from IT, 1999a
 ** Data from Remedial Design Investigation Report (FW, 2000)
 NA denotes not applicable for sample distribution, NA indicates insufficient number of samples included in the statistical analysis)
 <1.4 - indicates compound was analyzed for but was not detected above the listed reporting limit
 ft bgs - feet below ground surface
 Arithmetic means and standard deviations presented for normal distributions and distribution-free data, Geometric means and standard deviations presented for lognormal distributions.
 Non-detect results not used in ambient calculations because detection limit was greater than the maximum detection value
 Outlier result excluded from ambient calculations (see Appendix A text for explanation)
 *** Thallium results from 1999 samples excluded from ambient calculations due to possible laboratory method problems

(a) Explanation of ambient comparator derivation:
 95th quantile - parametric - data distribution was determined to be normal or lognormal and 95th quantile was calculated parametrically
 95th quantile - nonparametric - data distribution was not normal or lognormal and 95th quantile was calculated nonparametrically
 Maximum detected value - less than 20 samples available for use to calculate 95th quantile, minimum detection was used as comparator
 No comparator - less than 10% of samples were detection, no comparator was calculated
 (b) Non-detect results were used in calculation of the 95th quantile if the detection limit for the result was lower than the maximum detection for the metal. Detection limits which were used in the quantile calculation were included at half the detection limit value.

Table E-1. BRAC Ambient Concentrations